TURN KEY RADIO/MICROWAVE SITE DEVELOPMENT

Statement of Work and Specifications –

1.1 PROJECT OVERVIEW

INTRODUCTION and Background

The Department of Military Affairs (DMA) is assigned the responsibility to administer Homeland Security grant monies within the State of Montana.

The State of Montana is currently developing a digital microwave radio system that will ultimately provide interoperable statewide radio communication for a statewide community of users. The microwave radio dishes are placed on towers, and act as the backbone of the system. As this microwave infrastructure is developed the technology that supports interoperability will also be deployed.

Consistent with this goal, radio towers will be installed at strategic sites, and must be structurally sound. This solicitation is for Turn Key Radio/Microwave site development including the Self-Supporting Communication Towers at designated sites in Montana. Equipment Shelters and Generators have been purchased under a separate contract with Thermobond and will be installed by the contractor.

Interoperability Montana (IM) Project and the U. S. Air Force (USAF) have identified the first nine (9) sites listed below. This partnership between the IM - Central Consortium and the U.S. Air Force was developed to deploy microwave and trunking radio equipment in central Montana. Due to funding contingencies, installation must be completed by the end of August 2007 for Pacific Steel, Flying J, South Moccasin, Cooney, Sullivan Hill and Judith Peak. South Peak is a critical site but may be delayed a couple of months due to access issues and road construction. Bozeman and Beaverhead EOC are accessible year round. The Sullivan site is the priority site.

All awards are contingent on the ability to acquire various use and access agreements and other requirements to ensure operation of the site. No contract will be awarded where DMA cannot confirm the acquisition of all documents needed for site operation.

The state is also requesting bids for alternate services specific to the sites listed.

Prior to placing a tower and its foundation, geotechnical engineering and analysis are required to ensure the soil, foundation design, and site preparation are appropriate to support the needs of the structure during its operational life.

The State is attempting to obtain Geo Technical engineering and analysis for the Flying J and Sullivan site in advance to speed construction at these most time critical sites. This effort includes gather surface and subsurface soil samples at the proposed Tower site; perform geotechnical services to include subsurface soil and groundwater conditions, preliminary foundation design, and site preparation and earthwork requirements. The SOW to procure these services is attached for vendor review as Exhibit A. Bidders are expected to notify the STATE immediately if this scope of work will not produce the Geo-Tek data necessary to construct the site.

Time constraints preclude waiting until access to all sites becomes available in Spring of 2007 for bid solicitation. Several sites have limited or restricted access. Some sites are available year round, contractors wanting to visit accessible sites prior to submitting bid must contact John Horn, Contracting Officer (406) 324-3106 to schedule appointment. Contractor must bid with the understanding that personnel will be assigned and work begun as soon weather conditions permits with desired completion of work by August 31, 2007

Contracts will be executed based on the information in this document and contractor bids. When sites become accessible and contractor identifies additional requirements or changes from information in this document (i.e. soil analysis or access concerns), contractor may present requests for Change Orders to address additional tasks and costs to designated Project Manager.

Due to unique nature of projects and particular expertise required, contractors must submit list of Six (6) comparable projects completed within the previous 24 months. Contractor(s) selected to provide and install towers from list of primary sites will establish a slate of qualified contractors for subsequent tower installation(s).

To ensure continuity, to meet time constraints and to complete that portion of the project and individual sites assigned to them, the USAF has agreed to consider the contractors responding to this solicitation. The USAF will review the bids received and determine whether it is appropriate to execute contracts. The USAF may execute individual contracts for any or all of the sites within their purview.

DES, the local jurisdiction or designated authority is responsible for completion of environmental work, construction of a road, and power being brought to designated sites. DES will assign a "project site manager" to provide contract oversight and address problems that may arise. Contractor will coordinate work with Project Site Manager to mitigate unanticipated delays.

The successful contractor will present recommendations needed to provide solutions to changing needs, future expansion, coordinate/concur on site plans showing tower, shelter, and generator and be an active partner in integrating the tower and site into the overall design of the system to ensure tower is operational. Contractor personnel will immediately notify the project site manager of any issues or hazards.

In addition to the primary sites listed for completion by August 31, 2007 the solicitation will establish a slate of approved contractors for installation for additional sites at locations to be determined as funding is secured for a period of one (1) year. Location of the primary nine (9) primary sites is provided below:

Primary Tower Installation Sites

Site Name	USAF Funded	County	Equipment Staging City	Location Type	Tower Height
Flying J	Yes	Cascade	Great Falls	Valley	120
Judith Peak	Yes	Fergus	Lewistown	Mountain	150
Pacific Steel (Great Falls)	Yes	Cascade	Great Falls	Valley	150
South Moccasin "BLM"	Yes	Judith Basin	Lewistown	Mountain	130
South Peak		Judith Basin	Great Falls	Mountain	150
Sullivan Hill	Yes	Cascade	Great Falls	Mountain	100
Cooney		Wheatland		Mountain	100 installed stackable to 150
EOC/Bozeman		Gallatin	Bozeman	Valley	100
Beaverhead EOC		Beaverhead	Dillon	Valley	100

Because the project time line and construction season is short, DES or designated agency may provide the core sample, Geo-Technical report and tower foundation design for designated sites as is practical in advance of ordering and scheduling delivery of the towers. It is anticipated that this may speed up the timeline by as much as 6 weeks. The Statement of Work for the Geo-Technical work is attached as "Exhibit A" for vendor review. Bidders must provide separate pricing for the core sample and Geo-Tek report and foundation design to be added to the tower construction. Additional work will be added as a written "change order" as the need is identified. The State anticipates providing core samples for Pacific Steek, Flying J and Sullivan Hill.

OSHA – All work performed shall meet OSHA requirements and specifications.

2. DESCRIPTION OF WORK

2.1. Contractor will furnish all services, labor, materials, and equipment to install SELF-SUPPORTING GALVANIZED STEEL COMMUNICATIONS TOWER(S) and other services to provide a "turn-key" communication site at designated locations. This includes the tower, tower installation, optional shelter pad, shelter installation, generator installation, optional pad for outside generator installation,

optional electrical work, R-56 grounding, option to transport the customer provided shelter and generator to the site and generally, all services to provide a fully operational communications site which is ready for installation of radio and microwave equipment.

2.2. The sites are extremely hostile with the possibility of 1" of ice or more on all surfaces with a 90 mph wind speed or higher. It is the responsibility of the contractor to assess proper wind and ice loading per location along with any applicable state or local building codes. The tower structure design must conform to ANSI/EIA/TIA-222-F-1996 code.

2.3. Provide 80', 100', 120', 130', 140', or 150' self-supporting GALVANIZED STEEL tower with tubular legs depending on site requirements. Tower design to support the following equipment:

a) six (6) ten (10) foot dish antennas at the following locations
   i. one on each of the three legs at the 90 ft level,
   ii. one on each leg at 40 feet
   iii. on towers 100 feet or taller, one (1) four (4) foot dish antenna located 6 feet below the top of the tower on one leg.

b) Eleven (11), twenty one (21) foot radio antennas @ the following locations:
   i. Two (2) on top of tower,
   ii. Three (3), one on each leg, 30 ft. below the top of the tower
   iii. Three (3), one on each leg, at 60 ft.' level above the ground
   iv. Three (3), one on each leg, 30 ft. level above the ground

c) Tower materials to be supplied:
   i. Complete tower steel and hardware
   ii. Anchor bolts and templates
   iii. Climbing step bolts: one leg only on the 80' tower from ground level to the top of tower. On all towers of 100 foot or taller provide climbing step bolts for one leg from ground level to the top of tower and provide step bolts on the other two legs as follows: 100' to the 40' level, 120' to the 60 foot level, 140' and 150' towers to the 80' level . A climbing ladder can be substituted for the leg with step bolts to the top of the tower.
   iv. One (1) wave guide support ladder with 1 stacker to support 12 cables, for the 80'and 100' towers. All other tower heights require wave guide support ladder for 24 cables
   v. Fall protection safety cable kit with two (2) removable brakes and mounting brackets. The climbing kit hardware and associated cables must include hardware to secure the cables when not in use so that the wind does not whip the cables and cause damage the tower or antennas. Damage caused by improperly mounted wire ropes will be responsibility of the tower company (Tower climbers are required to provide their own harness.).
   vi. Ice Bridge: provide and install an ice bridge between the equipment shelter and the tower of sufficient size to support the cables listed in 2.2.c.iv.
   vii. P.E. certified tower profile and foundation drawings:
      a. Provide four (4) sets and one (1) electronic .PDF file
   viii. Progress digital images at each stage of construction for Montana building permit including 1) finished hole, 2) finished hole with rebar – before concrete is poured, 3) after concrete poured but before back fill, and at each major stage of tower stacking.
   ix. Final erection drawings and digital images of the tower. (Building Permit requirement)

2.4. Tower Foundation

a) Install the concrete foundation, based on engineering soil analysis of site:
   1. DES or designated agency may obtain the soil analysis and Geo-Technical report for the preliminary foundation; Pacific Steel, Flying J and Sullivan Hill will be provided by the customer.
   2. For those sites where the soil analysis and Geo-Technical reports are not provided by DES, the contractor will obtain the reports based on pricing established in Alternate 1.

b) Strength inspection including break tests, to be conducted at 7/14/28 days, a third-party testing and inspection company.

c) Digital images of the foundation rebar placement before the concrete is poured. (Building Permit requirement)
d) Site preparation in the area of the proposed tower foundation, will involve the excavation and backfill for engineered foundation.
e) **All tower foundations (except Flying J) to be designed and constructed for a 150 foot tower,** actual installed tower height may be shorter, allowing for future expansion of towers.

2.5. Tower Assembly, Erection, ladders, ice bridge, anti-climbing device and Coax Protection
a) Assemble and erect tower in accordance with OSHA and TIA/EIA standards.
b) Provide and Install climbing ladder, anti-climbing safety device and fall protection device.
c) Provide all necessary tools, labor and equipment to install cable ladder and ice bridge system from the top of tower to the RF cable entry port at the communication shelter.

2.6. TOWER PAINTING AND LIGHTING – FAA, FCC or local regulations may require the following:
a) provide all necessary services, tools and material required to paint communication tower and provide any reflective attachments on the tower, see Alternate 5
b) provide and install tower lighting, see Alternate 4

Paint and Lighting are not required on all towers and will be an *added* task/cost. State will provide information for each site at time order is confirmed.

2.7 Shelter and Foundation System - shelters and generators will be provided by the customer and have been shipped to a staging location in the "equipment staging city" by the shelter manufacturer. Some shelters will have an inside mounted generator, some will have an outside generator and factory installed transfer switch. Shelter size and generator installation (inside shelter or exterior) is indicated for each site.

a) Provide all services, tools, material and equipment required for the design/installation of the foundation for the shelter listed for each site.
b) Provide all services, tools, material and equipment required for the design/installation of the generator pad for the exterior mounted generators where required (see description for each site).
c) Contractor shall provide all services to install and set the prefabricated shelter onto the concrete pad. Installation must be plumb and anchored per manufacturer's specifications. This includes any use of heavy support equipment needed to safely perform the functions.
d) Contractor shall provide all services to install the generator onto the concrete pad where required. Installation must be plumb and anchored per manufacturer's specifications. This includes any use of heavy support equipment needed to safely perform the functions.
e) Strength inspection including break tests, to be conducted at 7/14/28 days, a third-party testing and inspection company.
f) The contractor may be required, see Alternate 2, transport customer provide shelter to site from the staging area. Determination will be provided at the time of order.

2.8 GENERATOR INSTALLATION - Contractor shall provide all services required to provide a complete installation, by qualified personnel, of a generator system. Details of generator supplied by **IM Project** for an outside installation will be provided at the time order is placed. This will include the following:
a) Inside Generator:
    i. Connection of all electrical and propane (liquid LP to Shelter) fuel including all excavation and underground work as may be required;
        1. Shelters with internal generators include a 24" x 24" Nema3R box (enclosure) and vaporizer valve.
    ii. Complete system checkout and start up, by factory certified personnel, conduct a load test, and provide a report to the project manager Engineer and provide a concrete pad according to the generator manufacturer specification;
b) Outside Generator:
    i. Delivery of the generator to the site (with the shelter), including off loading;
    ii. All services, tools, material and equipment required for the installation of the generator pad (foundation) per manufacture specifications. (Onan 60kw Generator)

iii. Installation of the generator onto the concrete pad. Installation must be plumb and anchored per manufacturer's specifications. This includes any use of heavy support equipment needed to safely perform the functions.
iv. Connection of all electrical and propane (liquid to generator-not vapor) fuel including all excavation and underground work as may be required;
v. As an **OPTION**, install the transfer switch,
Note, at time of order, contractor will be notified if transfer switch has been pre-installed in the equipment shelter at the shelter factory.
vi. Complete system checkout and start up, by factory certified personnel, conduct a load test, and provide a report to the project manager.

2.9 R-56 GROUNDING - Provide all necessary services, tools, conduit, piping, and other materials as may be required to install R56 grounding system based on TIA/EIA grounding specifications to meet Motorola R56 grounding requirement. This shall include all excavation and underground work as may be required. Complete site grounding (tower, shelter, fence, propane tank, and generator). It is the responsibility of the contractor to meet all NEC, R56 grounding, and TIA/EIA-568-B cabling specifications and provide necessary electrical permits.

2.10 ELECTRICAL SERVICES: All electrical services including installation of the meter base with a 200 amp main disconnect switch, all wiring from the meter base as required to provide a turn key installation of the shelter and the generator, all required state, local, and federal pre and completion permits and/or inspections required by law and any coordination with the power company that may be required.

2.11 The contractor will be responsible for securing the necessary permits from the necessary entities. All other required permits such as local building permits, electrical permit, building inspections, and any other required documentation are the responsibility of the contractor. State building permits will be the responsibility of the Customer.

2.12 Site Clean-up
b) Unused concrete material must be removed from the site location and disposed of.
c) The site to be graded so that surface water is directed away from the communication tower.

3. Delivery/Shipping (quote separately)

3.1. Goods shall be prepaid, F.O.B. destination to the radio site. In the event the contract terms specify F.O.B. shipping point, shipping charges will be prepaid and itemized as a separate item on invoicing. Such shipments shall be via the least expensive common carrier unless otherwise stipulated.

3.2. Contractor may be required to transport the customer provided shelter and/or generator to the site, see **Alternate 2.** This cost will be determined in advance of construction commencement in case alternative transportation must be located.

For information on manufacture specifications for installation of equipment shelters contact:

Chuck McKeever
Thermo Bond Buildings, Inc.
209 N. Court P.O. Box 445
Elk Point, SD 57025
800-356-2686
Fax 605-356-2005
www.thermobond.com
Chuck@thermobond.com

For information on manufacture specifications for installation of ONAN Generator contact:

Tom Murphy
Cummins Central Power
Omaha Office Phone 1-402-951-2770
Sioux Falls Office Phone 1-605-336-1715
Cell Phone 1-402-680-3098
tom.p.murphy@Cummins.com

ATTACHMENTS

Exhibit A
Geotechnical Engineering and Analysis, Foundation Design Specifications

Exhibit B, Summary by Site, provides information needed to develop a viable bid for each site:
Site name
City (nearest incorporated city)
County
Location
Elevation
Tower Height
Foundation (all foundations built to accommodate 150' tower)
Shelter size (bid includes pad for shelter)
Generator location (inside or outside, outside generators will require contractor to build pad)
Access description

Exhibit C -
Propane Tank Specifications

4.0 Bid Proposal Section -

Contractors will develop a bid for each site based on the information provided in the **Summary by Site** and the soil type listed for each site. The State has indicated the anticipated soil type at each location. Note section 2.4.e - tower foundation for 150 ft tower, some towers initially installed at 100 ft, stackable to 150 ft in the future.

Those sites marked with asterisks (**) are funded by the USAF. The USAF will review the bids and determine whether to execute a construction contract. The USAF has the authority to accept or refuse any or all bids for those sites where they have responsibility.

The undersigned, having familiarized themselves with the conditions of the work and the contract documents as prepared by the Department of Military Affairs personnel or designated representative, Architect or Engineer agrees to complete the work for the total sum per site as follows:

TURN KEY RADIO/MICROWAVE SITE DEVELOPMENT

1. Steel Communications Tower, Galvanized, Self Supporting, Tower foundation, Shelter Pad, Generator and installation for outside generators, R-56 Grounding, Electrical Services, permits site clean-up, (a turn key installation)

Site Name	Base Bid
**A. Flying J, 120' tower Normal Soil Core Sample will be provided by Customer	$ _____. ____
**B. Judith Peak, 150' tower Solid Rock	$ _____. ____
**C. Pacific Steel, 150' tower Normal Soil Core Sample will be provided by Customer	$ _____. ____
**D. South Moccasin, 130' tower Solid Rock	$ _____. ____
E. South Peak, 150' tower Solid Rock	$ _____. ____
**F. Sullivan Hill, 100' tower Solid Rock Core Sample will be provided by Customer	$ _____. ____
G. Cooney, 100' tower Normal Soil	$ _____. ____
H. EOC/Bozeman, 100' tower Normal Soil	$ _____. ____
I. Beaverhead, 100' tower Normal Soil	$ _____. ____

All tower work includes transportation costs to the site, except the customer provided shelter and generator, see alternate 2

Prospective contractors must provide bids on the following alternates -

Alternate 1.

EXHIBIT A provides the specifications.

Tower Site Geotechnical Analysis and Design,

per site $ _____. ____

Alternate 2.

The matrix in section 1.1 indicates the staging area for each site. Shelters will be shipped by the Shelter manufacturer to the cities indicated.

Transport customer provided Shelter and Generator from the staging area to communications site,
per mile $ _____. ____

Alternate 3.

EXHIBIT C provides the specifications.

Provide 1,000 gallon (heavy) propane tank.
per unit $ _____. ____

Alternate 4.

Install lights, LED with backup per FAA requirements

per tower $ _____. ____

Alternate 5.

Paint tower, per FAA requirements

per tower $ _____. ____

Insert dollar amount for each site, A through I, and alternate. 1 through 5. Where the contractor is not bidding on a particular line item, please insert -0-.

Insert Company Name, have authorized individual sign and date:

Company Name: _____

By: _____
Name/Title

_____
Signature Date

Submit pages eight (8) and nine(9) with bid bond and other required documentation to:

Via U S Postal Service
John Horn, Contracting Officer
Montana Department of Military Affairs
Disaster and Emergency Services
P O Box 4789
Fort Harrison MT 59636

Via Courier or Hand Deliver

John Horn, Contracting Officer
Helena Armed Forces Reserve Center
Montana Department of Military Affairs
Disaster and Emergency Services
Room 132
1900 Williams Street
Fort Harrison MT 59636

EXHIBIT A

GEOTECHNICAL ENGINEERING AND ANALYSIS -

SCOPE OF WORK

Gather surface and subsurface soil sample at the designated site; perform geotechnical engineering and analysis to include subsurface soil and groundwater conditions, foundation design, and site preparation and earthwork requirements appropriate to support the needs of the structure (tower) during its operational life.

The tower structure will be self supporting up to 150ft in height. The tower will be supporting microwave dish and other antenna's as described in Section 2.3 of this specification. The tower (with dishes and antenna) must withstand 100 mph winds and ice loading of 1" on all surfaces. Final Tower detail from the manufacturer will be provided as soon as available.

The geotechnical analyses must be completed in a timely fashion, with 4 copies of the reported findings provided back to

- SI International, 1050 North Newport Road, Colorado Springs, CO. 80916. Fax 719-572-3900. Primary point of contact is Bill Eastburn, Project Manager, SI International william.eastburn@si-intl.com; Ph: 719-235-4236.
- For the IM Project - Gary Hindoien, PO Box 4789, Fort Harrison Mt 59636-4789, ghindoien@mt.gov, (406) 841-3974, (406) 841-3965 fax
- The geotechnical analyses will be given to the Tower Manufacturer who will prepare the final foundation design based on the reports and analysis.

PROJECT DESCRIPTION

Contractor shall perform geotechnical engineering and analysis to ensure the soil, recommend a foundation design, and site preparation appropriate to support the needs of the described structure throughout its operational life.

PROJECT TASKS

Geotechnical - Subsurface Exploration, Testing, Engineering Analysis.

Subsurface: Perform one boring at the center of the proposed tower location.
Maintain a log during the drilling, and at intervals collect samples of subsurface materials. Collect and record penatration resistance measurements. At a minimum, boring to at least depth of 20 ft and recording the resistivity at 5 foot intervals, shall be necessary. In cases where site is solid rock, perform analysis as required to recommend a tower foundation based on site conditions, rock conditions, and expected excavation requirements.

Testing: Classify the samples collected. Perform tests necessary to conduct a competent geotechnical engineering analysis to support development of foundation and earthwork recommendations. At a minimum, test selected samples for moisture content, soluable sulfate, and resistivity.

Engineering Analysis: All information resulting from the exploration and testing activities should be included with the analysis and recommendations. Enginerring recommendations need to provide a "recommended" tower foundation design detail, excavation detail which should include subsurface soil preparation, fill materials, compaction, and any other earthwork considerations such as drainage.

REQUIRED SOILS INFORMATION FOR SELF-SUPPORTING TOWER FOUNDATIONS

PIER AND PAD FOUNDATIONS FOR A SELF-SUPPORTING TOWER

1. Allowable bearing capacity
2. Angle of internal friction

3. Unit weight
4. Depth to water table (if encountered)
5. Only one boring is necessary.
6. Depth of boring should be at least 20'.

MAT FOUNDATION FOR A SELF-SUPPORTING TOWER

1. Allowable bearing capacity
2. Unit weight
3. Depth to water table (if encountered)
4. Only one boring is necessary.
5. Depth of boring should be at least 15'.

CAISSON FOUNDATIONS FOR A SELF-SUPPORTING TOWER

1. Allowable skin friction
2. Allowable end bearing
3. Angle of internal friction
4. Depth to water table (if encountered)
5. Only one boring is necessary.
6. Depth of boring depends on the type of soil and the magnitude of the loads, and should be determined by the geotechnical engineer.

Reporting – Geotechnical & Environmental.

Five Reports shall be provided. Reports will contain all data collection and analyses, as well as the engineering recommendations for the tower foundation, site preparation, and earthwork for each site.

EXHIBIT C

PROPANE TANK –
Contractor shall provide transportation and all services, tools, conduit, piping, and other materials as may be required to provide and install one (1) 1000-gallon propane tank (HEAVY) onto a concrete pad and anchored per manufacturer's specifications. This includes gas line for liquid propane to the generator, connection to the generator, and all required inspections per county, state or public lands requirements.

a) Contractor will also ensure that the color of the tank is acceptable to local or federal rules, and shall paint said tank if needed; (QUOTE painting cost separately)
b) This shall include all excavation and underground work as may be required;
c) Coordination and payment for the filing the tank with propane.